

• • R E M A R K S • •

The present Preliminary Amendment is being filed together with a Request for Continued Examination of the above-identified application.

By the present Preliminary Amendment, independent claim 4 has been changed to recite that the water jets mechanically entangle the fibrous mixture to form a nonwoven fabric and then the nonwoven fabric is passed between a pair of embossing rolls to produce a plurality of protuberances in the nonwoven fabric.

Support for this limitation can be found in applicants' specification on page 7, lines 8-10.

Also by the present Preliminary Amendment, claim 7 has been changed to recite that one of the pair of embossing rolls is formed on a peripheral surface thereof with a plurality of protuberances having conical or pyramidal shapes.

Support for this limitation can be found at page 7, lines 10-16 of applicants' specification.

Also by the present amendment new dependent claim 8 has been added which recites further forming the nonwoven sheet with a plurality of apertures.

Support for this limitation can be found at page 7, lines 18-22.

Also by the present amendment, new dependent claim 9 has been added which recites the plurality of protuberances formed in the nonwoven fabric comprise discrete protuberances that are arranged in a two dimensional pattern across the nonwoven fabric.

Support for this limitation can be readily found in applicants' Fig. 2.

Entry of the changes to the claims is respectfully requested.

In the Official Action of June 21, 2002 the Examiner rejected claims 4-7 under 35 U.S.C. §103(a) as being unpatentable over EP 373,974 to Manning et al. in view of U.S. Patent No. 5,573,841 to Adam et al. and U.S. Patent No. 5,281,461 to Greenway et al.

The Examiner relied upon Manning et al. as disclosing a method of making a nonwoven fabric comprising the steps of forming a slurry of pulp fibers and thermoplastic fibers, depositing the fibers to form a wet sheet and hydraulically entangling the fibers. The Examiner stated that Manning et al. teaches fibers that have the dimensions claimed by applicants.

The Examiner conceded that Manning et al. does not disclose the weight percent of the fibers in the slurry.

The Examiner accordingly relied upon Adam et al. as teaching that in forming a fibrous slurry that slurry should contain about 0.01 to 1.5 percent by weight of fibers.

The Examiner conceded that neither Manning et al. nor Adam et al. that the hydroentangling step should also form protuberances on the nonwoven fabric.

By the present amendment, the step of forming the protuberances is recited as being separate from the hydroentangling step and involving the use of embossing rolls.

Manning et al. teaches the use of embossing dies that are depicted in Figs. 4-6. The alternate rows of embossments of Manning et al. are impressed into opposite sides of the web. Manning et al. teach that this type of embossing is known in the art as "perfembossing."

Applicants' invention utilizes a pair of embossing rolls as recited in claim 4 to form a plurality protuberances. Moreover, as depicted in Fig. 3 only one of the embossing rolls (roll 32) is provided with forming elements 34, so that the resulting nonwoven fabric has the configuration

depicted in Fig. 2 in which the protuberances appear to project from one side of the nonwoven fabric, and are arranged in a two dimensional pattern across the nonwoven fabric.

The embossing method of Manning et al. which is believed to help secure the various webs 11-14 together forms linear projections or knuckles in the composite fabric.

Accordingly, it is submitted that the claims as amended herein distinguish over the prior art of record.

Entry of the present Preliminary Amendment prior to continuing the examination of the present application is requested.

If upon consideration of the above, the Examiner should feel that there remain outstanding issues in the present application that could be resolved; the Examiner is invited to contact applicants' patent counsel at the telephone number given below to discuss such issues.

To the extent necessary, a petition for an extension of time under 37 CFR §1.136 is hereby made. Please charge the fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 02-0385 and please credit any excess fees to such deposit account.

Respectfully submitted,



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Claim 6 has been canceled.

4. (Three Times Amended) A method of making a nonwoven fabric containing thermoplastic synthetic microfibers, said method comprising the steps of:

a. providing a wet sheet from a slurry containing about 0.5 to 20 % by weight of a fibrous mixture dispersed in water, said fibrous mixture comprising about 90 to 10 % by weight of thermoplastic fibers that are about 7 to 30 mm long and as fine as about 0.1 to 0.8 d mixed with about 10 to 90 % by weight of pulp fibers that are about 2 to 7 mm long;

b. placing said wet sheet on a support; [and]

c. subjecting said wet sheet to high velocity water jet streams of about 50 to 200 kgf/cm<sup>2</sup> to effect mechanically entangling said fibrous mixture [and produce protuberances in the resulting nonwoven fabric.] and to obtain a nonwoven fabric; and

d. passing said nonwoven fabric between a pair of embossing rolls to produce a plurality of protuberances in said nonwoven fabric.

7. (Amended) A method according to Claim 4, wherein only one of the pair of embossing rolls is formed on a peripheral surface thereof with a [said] plurality of [protuberances have] projections having conical or pyramidal shapes.

New claims 8 and 9 have been added as follows:

--8. (New) A method according to Claim 4, further comprising forming the nonwoven sheet with a plurality of apertures.--

--9. (New) A method according to Claim 4, wherein the plurality of protuberances formed in the nonwoven fabric comprise discrete protuberances that are arranged in a two dimensional pattern across the nonwoven fabric.--